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An Annotated Bibliography of the Glassy Cutworm

Crymodes devastator (Brace)

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AN ANNOTATED BIBLIOGRAPHY OF THE GLASSY CUTWORM, *Crymodes devastator* (Brace)

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INTRODUCTION

The purpose of this circular is to consolidate the new world literature pertaining to the glassy cutworm, *Crymodes devastator* (Brace). This species occurs throughout North and South America and appears at infrequent intervals in outbreak proportions on important agricultural crops.

This species was originally described by Dr. J. P. Brace in the first volume of the American Journal of Science in 1818 as *Phalaena devastator*. In 1852 Guenée decided that *devastator* should be in the genus *Mamestra* rather than *Phalaena*. In 1856 the generic name was changed again to *Agrotis* by Asa Fitch. Grote (1874) moved the species to the genus *Hadena*, Smith (1893) changed this to *Xylophasia*, then Hampson (1908) referred it to *Sidemia*, and finally McDunnough (1937) assigned the species to its present genus *Crymodes*. Other synonyms are *Mamestra contenta* (Walker), *Mamestra ordinaria* (Walker), *Mamestra abjecta* (Guenée), *Agrotis marshallana* (Westwood), *Sidemia devastator speciosa* (Barnes and McDunnough) and *Polia speciosa* (Morrison).[3]

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The range of this species in North America extends from the Atlantic to the Pacific and from Mexico to Alaska. It is also reported from Argentina. Forbes (1905) in Illinois and Gillette (1891) in Iowa considered this species to be the most serious pest of its kind to corn and turfgrass. Smith (1910) found it to be one of the most destructive of the field cutworms in New Jersey. Norman (1875) stated that the glassy cutworm was by far the most common moth at St. Catherines, Ontario. Brace (1818) reported that these cutworms attacked almost all kinds of vegetables, preferring beans, cabbage and corn. The larvae of this species are more strictly subterranean in habits than most cutworms. The integument of larvae is unpigmented as in one of the white grubs. This lack of pigmentation and its body color of pale green give the larva its name of "glassy cutworm". The head and cervical shield are reddish-brown.

The patterns on the forewings of glassy cutworm moths are quite variable and cryptic. Complete descriptions of the moth are given in Crumb (1929) and Forbes (1954). The moth is also shown in color in Holland (1903) Plate XIX, Fig. 44.

The bibliographical information was obtained by a thorough search of the libraries at The Ohio State University and the Ohio Agricultural Research and Development Center for the years 1864 to 1973. The authors have established a profile on the glassy cutworm in cooperation with the Mechanized Information Center of The Ohio State University Libraries. This computerized system of retrieval will aid in keeping this bibliographical information current. Supplementary bibliographical data on glassy cutworm will be summarized at yearly

intervals and will be available on request from the Ohio Agricultural Research and Development Center. Reprints and photo copies of most of the literature have been obtained through interlibrary loan and have been assembled in looseleaf notebooks.

The preparation of this bibliography is only a part of an extensive, multi-state research program generously supported by grants from the Cooperative State Research Service and the federal Environmental Protection Agency. This is a regional research project entitled "Bionomics and Management of Soil Arthropod Pests". The comprehensive research is being conducted by scientists from the University of Missouri, Illinois Natural History Survey, Iowa State University, Michigan State University, University of Nebraska, New York State Agricultural Experiment Station, Ohio Agricultural Research and Development Center, Purdue University and University of Wisconsin.

Entries are listed alphabetically by author except in cases where the publication is anonymous or more likely to be identified with a governmental agency under which it was published. The abbreviations in the citations follow the American Standard for Periodical Title Abbreviations published in Biological Abstracts 45(13):4347-4361. All references in this publication deal with the glassy cutworm; however, the scientific name used in a given article is also used in the annotation so that there is no question as to the species being cited. The number in parentheses following the annotation represents the page number which includes information on the glassy cutworm if it is different from the citation page numbers.

Anonymous. 1890. Some of the bred parasitic Hymenoptera in the national collection. Insect Life 3:151-158.
Ichneumon jacundus Brulle was reared from Hadena devastatrix in LaFayette, Indiana in 1886 (151).

Anonymous. 1905. The principal injurious insects of 1905. Yearbook U. S. Dep. Agr. 1905:628-636.
The glassy cutworm, Hadena devastatrix, was reared from larvae found attacking young wheat in southern Michigan in October. Lands devoted to timothy the previous year seemed most subject to attack (634).

Anonymous. 1906. The principal injurious insects of 1906. Yearbook U. S. Dep. Agr. 1906:508-517.
The glassy cutworm, Hadena devastatrix, attacked young growing wheat in North Dakota (510).

Arnott, D. A. and H. W. Goble. 1943. The value of molasses-free baits in the control of cutworms in tobacco fields. 73rd Rep. Entomol. Soc. Ont.:30-37.
Experiments were conducted with poison baits of various formulations against cutworms, including Apamea (=Crymodes) devastatrix. The carriers tested included wheat bran, distillers' dried grains and sugar-beet pulp. Poisons tested were Paris green, sodium fluosilicate, white arsenic and sodium arsenite.

Barnes, W. and J. H. McDunnough. 1917. Check list of the lepidoptera of boreal America. Decatur, Ill.
The authors considered Sidemia devastator form speciosa Barnes and McDunnough valid for Crymodes devastator (Brace) (63).

Bethune, C. J. S. 1909. Injurious insects in Ontario in 1908. 39th Rep. Entomol. Soc. Ont.:128-135.
The glassy cutworm caused much damage to several acres of corn near Listowel. Poison bran-mash was suggested for control (131).

Blackmore, E. H. 1918. Entomology. Rep. Provincial Museum Nat. History British Columbia 1917:9-15.
A severe outbreak of cutworms occurred in the Victoria and Vancouver districts in May and June. Whole beds of garden produce were completely devastated. The glassy cutworm, Sidemia devastatrix, was one of the chief pests.

Bowles, G. J. 1880. Canadian cutworms. Annu. Rep. Entomol. Soc. Ontario 1879:37-46.
Descriptions are given of the larva and adult glassy cutworm, Agrotis devastator. It was common in Canada and northern and western United States (38-39).

Brace, J. P. 1818. Description of the Phalaena devastator (the insect that produces the cutworm), communicated for the American Journal of Science. Amer. J. Sci. 1:154-155.
This is the original description of the adult. Also the life history, habits and control measures for the glassy cutworm are given.

THE CANADIAN AGRICULTURAL INSECT PEST REVIEW

This publication aims to present, in manuscript form, a periodical statement on current insect pest conditions. It presents data governing the seasonal appearance of weather on degrees of parasitism, notes on distribution and abundance of insect pests. It has been published by the Canada Department of Agriculture, Research Branch-Scientific Information Section, Ottawa, Ontario, from 1923 to present. From 1923 to 1967, this publication was known as The Canadian Insect Pest Review.

1923. Can. Insect Pest Rev. 1.

The glassy cutworm was reported on Vancouver Island (3). It was common and widespread in the vicinity of Saskatoon, Saskatchewan, where it fed on the roots of wild barley (14).

1929. Can. Insect Pest Rev. 7.

The glassy cutworm was abundant in the Hemmingford district, Quebec (14).

1930. Can. Insect Pest Rev. 8.

The glassy cutworm attacked the roots of grasses at Fredericton, New Brunswick (18).

1932. Can. Insect Pest Rev. 10.

Adult glassy cutworms were found in large numbers in houses in Apple Hill, Ontario (94).

Heavy local infestations of the glassy cutworm damaged corn and grain at Maxville, Apple Hill and Munro's Mills, Ontario (49).

There was serious damage by the glassy cutworm at Westmeath, Greenwood, Cobden, Branby and Beachburg (25).

1933. Can. Insect Pest Rev. 11.

Glassy cutworm larvae were common in fields plowed from sod in the fall or spring in Ontario (24).

1934. Can. Insect Pest Rev. 12.

Glassy cutworm larvae were found in brome and rye grass at Simpson, Saskatchewan (64).

1936. Can. Insect Pest Rev. 14.

The glassy cutworm was common in a timothy meadow near Oxford Mills, Ontario (80).

1937. Can. Insect Pest Rev. 15.

The glassy cutworm attacked oats and barley in southern Ontario (3,33).

There was a light infestation of Sidemia (=Crymodes) devastator in the Spencerville - Kemptville district (107).

1938. Can. Insect Pest Rev. 16.

The glassy cutworm was abundant in a few localities in Ontario, but there was no general outbreak (35).

1939. Can. Insect Pest Rev. 17.

A few glassy cutworm larvae were found at Marmora and Spencerville, Ontario (134, 173).

1942. Can. Insect Pest Rev. 20.

Glassy cutworm larvae were found in soil samples at Marmora, Ontario (143).

Crymodes devastator was found in tobacco fields at Simcoe and Delhi, Ontario (228).

1949. Can. Insect Pest Rev. 27.

The glassy cutworm attacked corn at Napierville and St. Hyacinthe, Quebec (164).

1957. Can. Insect Pest Rev. 35.

Larvae of Crymodes devastator were numerous around the edges of lawns in Saskatoon, Saskatchewan (159, 300).

1958. Can. Insect Pest Rev. 36.

The glassy cutworm was abundant around the edges of lawns at Saskatoon (35).

There was a light infestation of Crymodes devastator in grassland at Canning, Nova Scotia (125).

The glassy cutworm was unusually abundant in grass in Hastings County, Ontario (192).

The glassy cutworm damaged roots of corn at Ottawa (316).

1959. Can. Insect Pest Rev. 37.

A few one-third-grown larvae of the glassy cutworm were found in late April in an old sod field in Nova Scotia (104).

A map of the known distribution of the glassy cutworm in Canada is presented (opposite 124).

1960. Can. Insect Pest Rev. 38.

Glassy cutworm adults were taken in light traps in the Chatham area (170, 223).

Crymodes devastator attacked Merion blue grass at Dawson Creek, British Columbia (190).

1961. Can. Insect Pest Rev. 39.

The glassy cutworm attacked Merion blue grass at Dawson Creek, British Columbia (9, 112, 117, 303).

1962. Can. Insect Pest Rev. 40.

Crymodes devastator adults were collected near Lake Huron in Ontario (2).

It damaged seed crops of Merion blue grass and creeping red fescue at Dawson Creek, British Columbia (59, 121, 193).

It attacked blue grass in Saskatchewan (92, 211).

The glassy cutworm damaged lawns in Regina, Saskatchewan (212). It attacked corn in the low areas of a field at Avonport, Nova Scotia (255).

1963. Can. Insect Pest Rev. 41.

The glassy cutworm attacked lawns in Saskatoon and Regina, Saskatchewan (45, 89, 202).

1964. Can. Insect Pest Rev. 42.

The glassy cutworm damaged lawns in Saskatoon (45), Moose Jaw and Regina (176) and attacked corn in Lambton, Middlesex and Huron Counties, Ontario (193).

1965. Can. Insect Pest Rev. 43.

The glassy cutworm damaged corn from Renfrew to Kemptville (43).

It damaged lawns in Greater Winnipeg (93, 210), Lethbridge (194) and Saskatoon (200).

1966. Can. Insect Pest Rev. 44.

The glassy cutworm injured several lawns in Saskatoon (2).

1970. Can. Insect Pest Rev. 48.

Isolated infestations of the glassy cutworm occurred in 50 acres of field corn in Lambton Co., Ontario. The parts of the field most affected were those adjacent to a pasture (10).

1971. Can. Insect Pest Rev. 49.

The glassy cutworm severely damaged 80 acres of field corn in Lambton Co., Ontario (9).

An average of two to three larvae per square foot caused severe damage to numerous lawns in Saskatoon, Saskatchewan (34).

Ceasar, L. 1915. Insects of the season in Ontario. 45th Rep. Entomol. Soc. Ontario:42-49.

The glassy cutworm damaged winter wheat in Grey County (46).

Ceasar, L. 1916. Insects of the season in Ontario. 46th Annu. Rep. Entomol. Soc. Ontario:29-33.

Sidemia (Hadena) devastatrix was recorded as a pest on wheat and barley (31).

Ceasar, L. 1927. Cutworms and army worms. Ont. Dep. Agr. Bull. 325:6-8. The type of injury, life history and control measures for cutworms attacking cultivated crops, including Sidemia devastator, are given (6-8).

Cook, W. C. 1920. Cutworms and army worms. Off. State Entomol., Univ. Farm, St. Paul, Minn., Circ. 52:1-8.
Control recommendations and a key for determination of the commoner cutworms of Minnesota, with an account of their life histories and habits are given. The species dealt with include Sidemia devastatrix.

Cook, W. C. 1934. Cutworms and army worms. Minn. Agr. Exp. Sta. Circ. 48:1-8.
The glassy cutworm, Sidemia devastatrix (=Crymodes devastator), is a subterranean species and lives almost entirely on field crops. They were active between May 15 and June 10, when they pupated. Poison baits must be harrowed about an inch below the surface for control.

Coquillett, D. W. 1897. Revision of the Tachinidae of America north of Mexico. U. S. Dep. Agr., Div. Entomol. Bull. 7 (Tech. Ser.):1-156.
The parasite, Gonia capitata DeG., was reared from Hadena devastatrix at Ames, Iowa (17).

Crawford, C. S. and R. F. Harwood. 1959. Lepidoptera associated with grasses grown for seed in eastern Washington. J. Econ. Entomol. 52(5):966-969.
Apamea (=Crymodes) devastatrix was very destructive to grasses in Washington. The relations of temperature, humidity and rainfall to catches of adults in light traps were discussed.

Crumb, S. E. 1929. Tobacco cutworms. U. S. Dep. Agr. Tech. Bull. 88:1-179.

The distribution, foodplants, habits, seasonal history, description of larva, pupa and adult, life history and parasites of the glassy cutworm are described (99-103).

Crumb, S. E. 1956. The larvae of the Phalaenidae. U. S. Dep. Agr. Bull. 1135:1-356.
This publication includes keys to the subfamilies, genera and species of noctuid larvae, including Crymodes devastator (228-235).

Davis, J. J. 1957. Insects of Indiana in 1956. Indiana Acad. Sci. Proc. 66:104-107.
In 1956 the glassy cutworm was a more serious pest than for many years. Greatest damage was to corn in light, sandy soils. Many thousands of acres of corn were destroyed in Starke, La Porte and other northern Indiana counties (104).

Ferguson, D. C. 1954. The Lepidoptera of Nova Scotia. Proc. Nova Scotian Inst. Sci. 23(3):161-375.
"C. devastator Brace Abundant everywhere at bait. June 20 - September 6." (249)

Ficht, G. A. 1940. Notes on Indiana Noctuidae. Proc. Indiana Acad. Sci. 49:243-253.
"Sidemia devastator Brace (2367). Glassy cutworm. Common and destructive. KeKalf Co., June 17-Sept. 23; Tippecanoe Co., Aug. 5."

Fitch, A. 1856. Cutworms. Rep. Insects N. Y. :314-316.
The author considered the devastating dart Agrotis devastator (=Crymodes devastator) synonomous with Agrotis marshallana. The moth is described and illustrated in Plate 3, figure 2 (315).

Fletcher, J. 1898. Injurious insects in 1898. 29th Annu. Rep. Ont. Entomol. Soc. 75-87.
The glassy cutworm attacked grain at Carleton Place, Ottawa (75).

Forbes, S. A. 1890. Notes on cutworms. 16th Rep. State Entomol. Ill.:84-97.
Brief notes are given on the life cycle of Hadena devastatrix, the glassy cutworm (96-97).

Forbes, S. A. 1904. The more important insect injuries to Indian corn. Univ. Ill., Agr. Exp. Sta. Bull. 95:331-399.
The habits, distribution, food plants, life history and control measures for the glassy cutworm are discussed (349-350).

Forbes, S. A. 1905. The more important insect injuries to Indian corn. 23rd Rep. State Entomol. Ill.:1-273.
The habits, distribution, food plants, life history and control measures for the glassy cutworm are discussed (19-20). This report is identical to Forbes, S. A. 1904. Ill. Agr. Exp. Sta. Bull. 95.

Forbes, W. T. M. 1954. Lepidoptera of New York and neighboring states. Part 3. Noctuidae. Cornell Univ. Agr. Exp. Sta. Mem. 329:1-433.
This publication contains keys to subfamilies, genera and species of noctuid moths. The male genitalia of devastator are illustrated in fig. 186. A detailed description of the moth and a brief description of the larva are given. It occurs from Gaspe, Quebec, to New Jersey, and west to the Pacific (186-187).

French, G. H. 1878. Insects injurious to the vegetable garden. Trans. Ill. State Hort. Soc. 11:179-203.
The larva and adult glassy cutworm are described (195-96).

French, G. H. 1878. Lepidoptera. 7th Rep. State Entomol. Ill.: 135-268.
Descriptions of the adult and larva of Hadena devastatrix are given (216).

French, G. H. 1878. Moths - Lepidoptera. 7th Rep. State Entomol. Ill.:79-106.
Hadena devastatrix was a pest of corn and garden produce in Illinois. Descriptions of the larva and adult are given (96).

Frost, S. W. 1955. Cutworms of Pennsylvania. Penn. Agr. Exp. Sta. Bull. 596:1-29.
The glassy cutworm larvae feed on the underground portions of grasses and grains and occasionally vegetables. There is one generation per year with the partially grown larvae overwintering (21).

Fyles, T. W. 1890. Kitchen-garden pests and how to deal with them. 21st Annu. Rep. Ontario Entomol. Soc.:44-50.
The glassy cutworm attacked cabbage. The larva and adult are described (49).

Fyles, T. W. 1896. Lepidopterous pests of the meadow and the lawn. 27th Annu. Rep. Ontario Entomol. Soc.:97-104.
Hadena devastatrix is mentioned as a pest of brome grass. The larva and adult are briefly described (101).

Gibson, A. 1912. Cutworms and armyworms. Can. Dep. Agr. Exp. Farms, Div. Entomol. Bull. 3:1-29.
The glassy cutworm attacked wheat, oats, corn and grass in meadows, and as a rule was only troublesome in grain fields sown on grass lands which were recently plowed. It also attacked cabbage, beans, lettuce and corn. Its appearance, life history and habits are discussed (22-23).

Gibson, A. 1915. Cutworms and their control. Dominion Can. Dep. Agr., Entomol. Br., Bull. 10:1-31.
Hadena devastatrix seldom comes above the surface of the ground, but feeds on the roots and underground stems of grasses, wheat, oats, tobacco, etc. Eggs are laid late in the season and the larvae hibernate when partly grown (24-25).

Gibson, A. 1915. Reports on insects of the year. 45th Annu. Rep. Entomol. Soc. Ont.:13-28.
Sidemia (Hadena) devastatrix was present in many localities in the Ottawa district attacking tobacco (14).

Gibson, A. 1920. Boring caterpillars affecting corn and other crops and which are liable to be mistaken for the European corn borer. Can. Dep. Agr., Entomol. Br. Circ. 14:1-14.
The glassy cutworm, Sidemia devastatrix, though not a borer, often attacks corn, and its work may, therefore, be mistaken for that of Ostrinia nubilalis (13).

Gibson, A. 1923. Report of the Dominion Entomologist for the two years 1919 and 1921. Canada Dep. Agr.:1-40.

"In Ontario, the glassy cutworm, Sidemia devastator Brace, was rather abundant in 1919, and in Middlesex County caused important injury. Near Pond Mills, Ontario, an eight-acre field of corn was entirely destroyed. The field had been in sod for four years (7).

Gilbert, H. A. 1939. Explorations of the hypopharnyx in noctuid larvae. Can. Entomol. 71:231-237.
A description and illustration of the hypopharynx of Crymodes devastator is given (233-34).

Gillette, C. P. 1891. Notes on habits and life histories of certain cutworms and cutworm moths. Iowa Agr. Exp. Sta. Bull. 12:538-544.
Hadena devastatrix was the most abundant and destructive cutworm in grasses and corn fields in central Iowa. Parasites and pathogens are discussed (543).

Girault, A. A. 1916. New Encyrtidae from North America. Psyche 23(2):41-50.
Among the species described was Berecyntus bakeri Howard, var. gemma, var. n. from the larvae of Sidemia (Hadena) devastatrix.

Gossard, H. A. 1917. Cutworms, their habits, characteristics and means of control. Mon. Bull. Ohio Agr. Exp. Sta. 2(3):85-90.
Sidemia devastatrix (=Crymodes devastator) was common and destructive in Ohio. Predators included birds, toads, skunks, shrews, ground beetles, tiger beetles, digger wasps and other insects. Paris green and arsenical baits were suggested for control.

Gossard, H. A. 1918. Report of the committee on entomology, (1917). Ohio Hort. Soc. Rep. 51:43-47.

Cutworms were common pests in Ohio in 1917 but owing to the rank, rapid growth of garden crops, their ravages were hardly noticed. The variegated cutworm and the glassy cutworm were reported to be the worst offenders (44).

Grote, A. R. and C. T. Robinson. 1868. Notes on the North American Lepidoptera in the British Museum and described by Mr. Francis Walker. Trans, Amer. Entomol. Soc. 2:67-88.

"Part IX.-1856. Mamestra ordinaria, Walk., p. 232= Mamestra devastator. This species has received several names. It is the Agrotis devastator of the American authors." (77). A description is also given of Mamestra contenta (=Crymodes devastator).

Grote, A. R. 1873. A study of North American Noctuidae. Bull. Buffalo Soc. Nat. Sci. 1:95-128.

"Hadena devastator

Phalaena devastator, Brace

Mamestra ordinaria, Walker.

Habitat, Atlantic district." (108)

Grote, A. R. 1874. List of the Noctuidae of North America. Bull. Buffalo Soc. Nat. Sci. 2:1-54.

"Hadena devastator (Brace), (Phalaena)

? Mamestra passer Guen., Noct. 1, p. 195;

Mamestra ordinaria Walk., Noct. p. 232;

? Mamestra contenta Walk., Noct. 233;

Grote, Bul. Buf. Soc. Nat. Sci. 1, p. 108 (Hadena)" (15).

Grote, A. R. 1878. Descriptions of Noctuidae, chiefly from California. Bull. U. S. Geol. & Geog. Surv. Ter. 4:169-187.
"Hadena devastatrix (Brace). A specimen sent to me by Dr. Bailey from Nebraska has the primaries very pale, setting off the ornamentation. It bears some resemblance to my material of exulis from Labrador." (178)

Grote, A. R. 1882. Notes on Mr. Walker's types of North-American Noctuidae in the British Museum. Illus. Essay on the Noctuidae North Amer.:38-47.
Corrections on Walker's identifications were made. Mamestra contenta and Mamestra ordinaria were both specimens of Hadena devastatrix (43).

Guenee, M. A. 1852. Histoire naturelle des insects. Species general des Lepidopteres Noctuelites. 1.
The author considered Mamestra devastator Guenée valid for Crymodes devastator (Brace) (194).

Guyton, T. L. and J. R. Stear. 1929. Field corn injured by larvae of Sidemia devastatrix. J. Econ. Entomol. 22(2):420-421.
Slight injury by the larvae of the glassy cutworm was observed in a corn field in Pennsylvania. The attack was confined to the higher, dryer portions of the field. Feeding occurred about 1 inch below the surface.

Hampson, G. F. 1908. Catalogue of the Noctuidae in the collection of the British Museum. 7:446.
The author considered Sidemia devastatrix Hampson valid for Crymodes devastator (Brace).

Harris, T. W. 1862. A treatise on some of the insects injurious to vegetation. 3rd ed. Boston. 640 pp.
A description of the adult and a brief discussion of life history and habits of Agrotis devastator are given (324-325).

Hewitt, C. G. 1917. Report of the Dominion Entomologist for the year ending March 31, 1916. Dominion Can., Dep. Agr.:1-70.
The glassy cutworm seriously damaged crops of wheat, oats, barley, timothy grass and corn in Canada.

Hewitt, C. G. 1920. Report of the Dominion Entomologist and Consulting Zoologist for the two years ending 31st March 1919. Can. Dep. Agr.:1-23.
Wheat and oats were attacked by Sidemia devastatrix in western Canada.

Holland, W. J. 1968. The moth book. Dover Publications, Inc., N. Y., N. Y. 479 pp.
"Hadena devastatrix Brace, Plate XIX, Fig. 44. (The Destroying Hadena.) Syn. ordinaria Walker; contenta Walker; marshallana Westwood. Universally distributed throughout the U. S. and southern Canada." (169).

Hudson, H. F. 1920. Report of the insects of the year: Division No. 6. 50th Annu. Rep. Entomol. Soc Ontario:83-84.
Cutworms, particularly the glassy cutworm, were very numerous in old sod lands in Ontario.

Humphreys, H. W. N. 1857. British moths and their transformations. 1:1-256.
A new species, Agrotis marshallana, was described (122-23).

This species was later found to be the same as Crymodes devastator (Brace).

Kent, G. H. 1888. Some notes from Mississippi. Insect Life 1:17. Hadena devastatrix attacked cabbage, beet and radish in Mr. Kent's garden in Mississippi.

King, K. M. 1929. Insects affecting field crops and gardens in Saskatchewan, 1922-1927. Sci. Agr. 9(6):373-390. Damage caused by Sidemia devastatrix (=Crymodes devastator) was insignificant in Saskatchewan.

Knowlton, G. F. 1958. Some Utah insects - 1958. Part II. Utah State Univ. Ext. Serv., Mimeogr. Ser. 171-A:9-13. "Crymodes devastator. Taken from lawns in Granger at depth of 6-7 inches; at least 12 lawns in Granger reportedly damaged by these larvae, June 5." (10).

Knutson, H. 1944. Minnesota Phalaenidae (Noctuidae). The seasonal history and economic importance of the more common and destructive species. Minn. Agr. Exp. Sta., Tech. Bull. 165:1-128. The glassy cutworm attacked sod, corn, strawberry, wheat, alfalfa and timothy in Minnesota. Life history, rearing data and light trap collections are discussed.

Lilly, J. H. 1950. Control of cutworms in Iowa. Proc. 5th Annu. Meet., North Cent. States Br., Amer. Assoc. Econ. Entomol.:21. Of DDT, chlordane, BHC and toxaphene, toxaphene appeared to give the best control of the glassy cutworm.

Lugger, O. 1899. Butterflies and moths injurious to our fruit-producing plants. Minn. Agr. Exp. Sta. Bull. 61:55-320.
The glassy cutworm is mentioned as a pest of strawberry. The larva and adult are illustrated and briefly described (217-18).

Maheux, G. 1918. Report of the Provincial Entomologist. Rep. Minist. Agr. Prov. Quebec:86-90.
Hadena devastatrix destroyed large fields of cereals in Quebec.

Martin, S. and F. B. Cotner. 1934. Serological studies of moth proteins with special reference to their phyllogenetic significance. Ann. Entomol. Soc. Amer. 27:372-83.
Sidemia devastator was one of the species of noctuids used to determine serological specificity of the proteins of certain moths.

McDunnough, J. H. 1937. Notes on North American Noctuid Genera. Can. Entomol. 69:58-66.
The author considered Crymodes devastator valid for this species (59).

Metcalf, C. L. and W. P. Flint. 1962. Destructive and useful insects. 4th Edition. McGraw-Hill Book Co., Inc. N. Y. 1087 pp.
The glassy cutworm larva is briefly described and control measures on corn are given (479).

Morrison, H. K. 1874. Descriptions of new Noctuidae. Proc. Bost. Soc. Nat. Hist. 17:131-166.

The author considered Polia speciosa Morrison valid for Crymodes devastator (Brace) (137).

Muesebeck, C. F. W. 1932. Revision of the nearctic Ichneumon flies belonging to the genus Macrocentrus. Proc. U. S. Nat. Mus., 80, art. 23, (2923) 1-55.
Among the new species described were Macrocentrus crassipes, reared from Sidemia (Hadena) devastatrix, (Brace)(=Crymodes devastator) in Montana.

Muma, M. H. 1946. Insects injurious to corn in Nebraska. Univ. Neb., Coll. Agr., Ext. Serv. Circ. 1537:1-20.
The glassy cutworm was a pest of corn in Nebraska. The life cycle, injury and control of cutworms in general are briefly discussed (17).

Norman, G. 1875. Captures of Noctuidae at St. Catherines, Ont. Can. Entomol. 7:3-6.
"Mamestra devastator - 24th June to September. By far the most common moth here; a perfect nuisance at sugar." (6).

Okumura, G. T. 1959. Illustrated key to the lepidopterous larvae attacking lawns in California. Calif. Dep. Agr. Bull. 48(1):15-21.
The turf hosts, distribution in California and a description of the larvae of Septis (Crymodes) devastator are given in addition to the illustrated key.

Oldroyd, L. T. 1947. Control and biology of cutworms and other insects of importance in Alaska, with special reference to the Matanuska Valley. Univ. Alaska, Agr. Exp. Sta., Progress Rep. 10:51-56.

Glassy cutworm adults were common at Matanuska, but only a few cases of actual crop infestation by its larvae were noted. It was regarded as a potential economic pest (52).

Osborn, H. T. 1956. Insect pest detection survey. Calif. Dep. Agr. Bull. 45(2):143-149.
Crymodes devastator damaged blue grass in the Tehachapi area of California.

Riley, C. V. 1869. Cutworms. First Annu. Rep. on the noxious, beneficial and other insects of Mo.: 67-91.
The habits and general description of the larvae and the characteristics of the adult and pupae of the glassy cutworm (Hadena devastatrix) are given (83-84).

Riley, C. V. 1881. Notes and additions. Lepidoptera. Index and Suppl. to Mo. Rep.:54-58.
"Agrotis devastator, Brace (Rep. I, p. 83)--Grote refers it to Hadena." (56).

Riley, C. V. 1885. Cabbage cutworms. Annu. Rep. U. S. Comm. Agr. for 1884:289-300.
Past history, natural history and characters of the glassy cutworm, Hadena devastatrix, are given (296-297).

Riley, C. V. 1887. Insects affecting timothy. Annu. Rep. U. S. Comm. Agr. for 1886:578-580.
There was an outbreak of the glassy cutworm on timothy in Indiana in 1886. Various parasites and pathogens were described.

Rockwood, L. P. 1926. Some important wheat insects of the North Pacific region. Columbia Port Digest 4(3):10-11,25. Portland, Oregon.
Cutworms occasionally caused considerable damage to wheat and other cereal crops. Sidemia devastatrix (=Crymodes devastator) was sometimes injurious to grain crops in humid regions of the Pacific northwest.

Ross, W. A. and L. Ceasar. 1920. Insects of the season in Ontario. 50th Rep. Entomol. Soc. Ont.:95-104.
The glassy cutworm caused some alarm in Middlesex County in mid-June by cutting off wheat plants. The total loss, however, was not great (103).

Saunders, W. 1883. Insects injurious to fruits. Lippincott & Co., Philadelphia. 436 pp.
The glassy cutworm attacked strawberry foliage. The larva and adult are illustrated and described. Air-slaked lime, ashes, powdered hellebore and Paris green were suggested for control (329).

Slingerland, M. V. 1902. Trap lanterns or "moth catchers". N. Y. Cornell Agr. Exp. Sta. Bull. 202:199-225.
Hadena devastatrix adults were taken in kerosene light traps from June until the middle of September.

Smith, J. B. 1891. Contributions toward a monograph of the Noctuidae of temperate North America. Revision of the species of Hadena referable to Xylophasia and Luperina. Proc. U. S. Nat. Mus. 13:407-447.
References to synonymy are given, the adult is described and

the habitat of the glassy cutworm is discussed (426-427).

Smith, J. B. 1893.
Catalogue of the lepidopterous superfamily Noctuidae found in boreal America. Bull. U. S. Nat. Mus. 44:1-424.
Xylophasia devastatrix Brace. This article includes the taxonomic synonomy from 1819 to 1883.
Habitat. United States and Canada, June to September.
Walker's types are in the British Museum and have been correctly referred by Mr. Grote. The reference to marshallana is after Walker (136).

Smith, J. B. 1910. The insects of New Jersey. N. J. State Museum Annu. Rep. 1909:15-888.
"Xylophasia devastatrix Brace. Throughout the State commonly, all season. The larva is one of the most destructive of our field cutworms." (449).

Specht, H. B. 1972. Cutworms of tobacco in Nova Scotia:I. Species complex and infestation. Can. Entomol. 104(12):1855-1864.
Crymodes devastator was among the species reared from field collected larvae and caught in bait and light traps in Nova Scotia.

Stedman, J. M. 1906. The more important insects injurious to corn in Missouri. 38th Rep. Mo. Bd. Agr.:271-286.
The glassy cutworm was a common and widespread pest of grass and corn. The larvae are subterranean and very rarely come to the surface, making control difficult. A brief description and life history are given (284-285).

Strickland, E. H. 1921. Parasites of the pale western cutworm in Alberta. Can. Entomol. 53(5):97-100.
Meteorus dimidiatus Cress., a braconid parasite, was reared from Sidemia devastator, a species of cutworm that had never been recorded as coming to the surface (99).

Strickland, E. H. 1923. Biological notes on parasites of prairie cutworms. Can. Dep. Agr. Bull. N. S. 26 (Entomol. Bull. 22):1-40.
Sidemia devastatrix (=Crymodes devastator) seldom caused much damage to crops in southern Alberta. It was important chiefly as an alternative host of bivoltine parasites.

Strickland, E. H. 1933. Insect pests of grain in Alberta. Univ. Alberta, Coll. Agr., Ext. Bull. 24:36.
Distribution in Alberta, life history and habits and control measures for the glassy cutworm are given.

Tietz, H. M. 1951. Lepidoptera of Pennsylvania. A manual. Penn. State Coll., School Agr., Agr. Exp. Sta.: 1-194.
Synonyms and food plants of the glassy cutworm are given (73).

Treat, A. E. 1955. The response to sound in certain Lepidoptera. Ann. Entomol. Soc. Amer. 48:272-284.
A method is described for the kymographic recording of certain types of overt response to sound, chiefly in noctuid Lepidoptera, including Crymodes devastator. Three types of response were illustrated kymographically: (A) initiation of flight movements; (B) change in form and frequency of the wing beat; (C) interruption or cessation of flight movements.

Treat, A. E. 1958. A five year census of the moth ear mite in Tyringham, Massachusetts. Ecology 39:629-634.

During the years 1952 thru 1957, 26 specimens of Crymodes devastator were found infested with moth ear mites, Myrmonyssus phalaenodectes Treat (633).

Treat, A. E. 1959. The metathoracic musculature of Crymodes devastator (Brace) (Noctuidae) with special reference to the tympanic organ. Smithsonian Misc. Collections 137:365-377.

Crymodes devastator was used to study thoracic musculature.

Treat, A. E. and K. D. Roeder. 1959. A nervous element of unknown function in the tympanic organs of moths. J. Insect Physiol. 3:262-270.

A B neurone was found in every noctuid species examined. Histological preparations were made from Crymodes devastator and other species.

UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATIVE ECONOMIC INSECT REPORT[1]

The Bureau of Entomology of the United States Department of Agriculture, in cooperation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges and other entomological agencies organized an Insect Pest Survey in 1921. This survey attempted to assemble and disseminate all data on the distribution, seasonal and regional fluctuation of insect abundance, weather

[1]Issued by Plant Protection and Quarantine Programs, Animal and Plant Health Inspection Service, U. S. Department of Agriculture.

data as related to insect outbreaks, phenological data and other miscellaneous information. Each year an annual digest of the important facts gathered during the past season was published in the form of Insect Pest Summaries.

From 1921 to 1950 this publication was entitled "The Insect Pest Survey Bulletin." This was not bound or indexed for the years 1942-1949. In 1951 the Bulletin was replaced by the "Cooperative Economic Insect Report" Vol. 1., No. 1, July 31, 1951. No explanation is given in this publication for the name change.

1928. USDA Insect Pest Survey Bulletin 8.

"The glassy cutworm, Hadena devastatrix, was reported damaging delphiniums at Tipton (Indiana) May 21." (90).

1941. USDA Insect Pest Survey Bulletin 21.

Sidemia devastator (Brace), A. ypsilon, and the variegated cutworm, Peridroma margaritosa Haw. were common on May 19 in Minnesota (151).

Glassy cutworms caused moderate to serious damage to corn at Lapoint and to newly set cabbage at Morgan and Salina, Utah; also in Utah County and in the Milford Valley area between May 20 and June 6 (237).

A cutworm, Crymodes devastator (Brace) destroyed about 5 to 10 percent of a large field of corn near Marshallton (June 21, 1941) (413).

A heavy flight of moths was recorded at Augusta, Maine, in August 1941 (503).

1952. Coop. Econ. Insect Rep. 2.

"Cutworms - particularly black cutworm (Agrotis ypsilon)

caused major damage in flood plains of rivers. All damage occurred in June. Glassy cutworm (Crymodes devastator) in 2 locations." (Iowa, 1952) (419).

1955. Coop. Econ. Insect Rep. 5

CALIFORNIA. - Glassy cutworm found severely injuring Merion blue grass in mountainous area of Kern County and in Yolo County. Damage by this species rare in California. (April 22, 1955) (378).

CALIFORNIA. - During investigation of a heavy aphid infestation on bluegrass in Kern County numerous dead clumps of grass were noted. This damage was at first attributed to the aphid but on closer examination it was determined that it was due to glassy cutworm (Crymodes devastator) feeding on the roots (June 3, 1955) (480).

OHIO. - Agrotis ypsilon and Crymodes devastator caused damage to corn following mixed meadows in northeastern Ohio (June 10, 1955) (507).

WASHINGTON. - "A cutworm, Crymodes devastator, causing severe damage to Merion bluegrass in Garfield County, Washington. The cutworms are pupating and a wilt disease is common in the larvae" (June 24, 1955), (original statement amended in CEIR 5:645) (569).

1956. Coop. Econ. Insect Rep. 6.

Cutworms (Crymodes devastator) were observed on alfalfa in Deschutes Co. and on bluegrass in Union Co., Oregon (121).

Glassy cutworm severely damaged bluegrass in Garfield Co., Washington (127).

Glassy cutworm infested bluegrass near Pomeroy, Delaware. Turf examined March 30 contained 6-12 or more young cutworms (302).

Severe localized damage to Merion bluegrass in Union Co., Oregon, May 4 (445).

A number of cutworms, principally Crymodes devastator, were responsible for damage to corn in California (500).

1957. Coop. Econ. Insect Rep. 7.

Glassy cutworm was more serious than for many years. Greatest damage was to corn in light sandy soils. Many thousands of acres of corn were destroyed in Starke, LaPorte and other northern Indiana counties (79).

Heavy infestation persists in seed fields of Merion bluegrass in Kern Co., California (153).

Cutworm data on forage crops are compiled in Table 1 (178).

Crymodes devastator damaged fescue seed in Marion Co., Washington (251).

Adults emerged in grass seed-growing areas near Dishman, Washington (528).

Various grasses were damaged near Dishman, Washington (773).

1958. Coop. Econ. Insect Rep. 8.

Crymodes devastator continued moderate to heavy damage to Merion bluegrass and other seed grasses in Spokane Co., Washington (264).

1960. Coop. Econ. Insect Rep. 10.

Glassy cutworm present in Union Co., Oregon grass seed fields (1075).

Damaged Merion bluegrass at Dawson Creek, British Columbia (1082).

1961. Coop. Econ. Insect Rep. 11.

Glassy cutworm required controls in fields of grass in Union Co., Oregon, during September (135).

Larvae damaged grass seed fields in Union Co., Oregon (319).

Glassy cutworm damaged pasture in Dawson Creek, British Columbia (1091).

1962. Coop. Econ. Insect Rep. 12.

The glassy cutworm caused pronounced damage to grass-seed fields in Union Co., Oregon (137).

1963. Coop. Econ. Insect Rep. 13.

The glassy cutworm injured lawns in Saskatoon, Saskatchewan (1401).

1964. Coop. Econ. Insect Rep. 14.

Glassy cutworm damaged 50% of 11 acres of field corn near Holmesville, Ohio (566).

Large numbers of adults appeared in Washington (965).

1965. Coop. Econ. Insect Rep. 15.

Destructive to field corn in the Hudson Valley N. Y. (158).

Destroyed 50% of 11 acres of corn in Holmes Co., Ohio (159).

Heavily damaged field corn at Orrville, Ohio (536).

Glassy cutworm quite serious on corn in northeast Pennsylvania (568).

Larvae damaged corn in Sanilac and Livingston Counties, Michigan (600).

Damaged corn in Michigan's lower peninsula (672).

Damaged sugar beets and tomatoes in the lower peninsula of Michigan (683).

Damaged field corn at Walpole, New Hampshire (708).

1966. Coop. Econ. Insect Rep. 16.

Injured lawns in Greater Winnipeg, Manitoba (56).

Damaged corn in Michigan, Ohio and Pennsylvania (108).

Late fall damage in 3 fields of bluegrass in Linn Co., Oregon (114).

Damaged corn in Winona and Fillmore Counties, Minnesota (569).

Damaged 25% of a 20-acre alfalfa field in Pennsylvania (635).

1967. Coop. Econ. Insect Rep. 17.

Unusually large numbers damaged 50% of a field of silage corn in New Hampshire (139).

Damaged lawns in Pershing Co., Nevada (146).

Damaged alfalfa in central Pennsylvania (161).

Some spotty damage to corn planted on sod ground in Winneshiek, Allamakee and Clayton Counties, Iowa (587).

Damaged turf in Clayton Co., golf course (588).

Crymodes devastator increasing in Michigan light traps (705).

Adults very heavy in Montcalm Co., Michigan (814).

1968. Coop. Econ. Insect Rep. 18.

Crymodes devastator severe on 12,000 untreated acres

of corn following sod in Allamakee Co., Iowa (543).
Lighter light trap catches than past 2 years in Michigan (701).
Adults increasing at all light trap stations in Michigan (734).
High numbers of adults caught in light trap stations in Michigan (842).
Weekly totals of light trap catches in Michigan (864).

1969. Coop. Econ. Insect Rep. 19.
Replanting of some early corn in Michigan was done following damage by glassy cutworm (133).
Larvae infested grass seed fields near Imbler, Oregon (306).

Walker, F. 1856. List of the specimens of lepidopterous insects in the collection of the British Museum. Part 9:232-233. Mamestra ordinaria and Mamestra contenta (=Crymodes devastator) are described.

Walton, W. R. and J. J. Davis. 1916. Cutworms and their control in corn and other cereal crops. U. S. Dep. Agr., Farmer's Bull. 739:1-3.
The various cutworms are known under a number of popular names, such as the glassy cutworm, greasy cutworm, variegated cutworm, etc., but the injuries caused by them are very similar as are their habits. Importance and nature of cutworm injury, life history, and control of cutworms are discussed.

Walton, W. R. 1920. Cutworms and their control in corn and other cereal crops. U. S. Dep. Agr. Farmer's Bull. (Rev.) 739:1-7. This is a revision of an earlier bulletin dealing

with the life histories of the cutworms Hadena devastatrix (=Crymodes devastator), Agrotis ypsilon, Lycophotia margaritosa and Agrotis c-nigrum.

Washburn, F. L. 1911. Cutworms, army worms and grasshoppers. Minn. Agr. Exp. Sta. Bull. 123:66-84.
Habits, life history and control of cutworms in general are discussed. Larva, pupa and adult glassy cutworm are illustrated (66-69).

Webster, F. M. and C. W. Mally. 1899. Insects of the year in Ohio. U. S. Dep. Agr., Div. Entomol. Bull. 20:68-73.
Glassy cutworms were very abundant in winter-broken sodland near Troy, Ohio. This ground was planted with seedling peaches and by June 5, 1899, 35% were destroyed (72).

Westwood, J. O. 1857. Humphrey's British Moths. London 1:122.
The author considered Agrotis marshallana Westwood valid for Crymodes devastator (Brace).

Whitcomb, W. D. 1928. An experiment in trapping cutworms. J. Econ. Entomol. 21(4):592-598.
Glassy cutworm larvae were trapped using chickweed sods on bare soil. Rain and general cold cloudy weather noticeably decreased the number of cutworms collected, while temperature variations had a less noticeable influence.

Willing, T. N. 1914. Principal recent insect injuries in Saskatchewan. Agr. Gaz. Can., 1(10):812-814.
Cutworms, including Sidemia devastatrix, were troublesome in early summer in Canada.

Winters, N. E. 1925. Manual para el cultivo del algodonero en la Republico Argentina (A manual on cotton cultivation in Argentina.) Argent. Minist. Agr. Circ. 539:1-78. *Sidemia* (*Hadena*) *devastatrix* is dealt with as a pest of cotton.

INDEX

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